

## NOTA CIENTÍFICA

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**Observations on the larval biology in the genus  
*Calydon* (Coleoptera: Cerambycidae) with new records  
in Patagonia, Argentina**

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**Observaciones sobre la biología del género *Calydon*  
(Coleoptera: Cerambycidae) con nuevos registros para la  
Patagonia, Argentina**

■ **RESUMEN.** Se obtuvieron 20 adultos de *Calydon submetallicum* de trozas de roble pellín (*Nothofagus obliqua*), especie forestal introducida en la provincia de Chubut. Las galerías larvales y las cámaras pupales de *Calydon submetallicum* (Blanchard) (Coleoptera: Cerambycidae) son descritas en detalle según la metodología propuesta por Di Iorio, y la cámara pupal es ilustrada por primera vez. Se presenta una revisión de las plantas hospedadoras y se actualiza el rango de distribución del género.

**PALABRAS CLAVE.** Coleoptera. Cerambycidae. *Calydon*. Larvas. *Nothofagus*. Argentina.

■ **ABSTRACT.** 20 specimens of *Calydon submetallicum* were collected from "roble pellín" (*Nothofagus obliqua*), an introduced species in the forests of western Chubut Province (Argentina). Larval tunnels and pupal chambers of *Calydon submetallicum* (Blanchard) (Coleoptera: Cerambycidae) are described in detail following the method proposed by Di Iorio, and the pupal chamber is illustrated for the first time. A revision of the host plants and updated distribution range of the genus is presented.

**KEY WORDS.** Coleoptera. Cerambycidae. *Calydon*. Larvae. *Nothofagus*. Argentina.

*Nothofagus* forests (District of the Caducifolius Forest) (Cabrera, 1976) occur from Neuquén all through Tierra del Fuego (Sub-Antarctic Dominion), and have several species of economic interest. *N. antarctica* (Forst. f.) Oerst. ["ñire"] and *N. pumilio* (Poepp. & Endl.) Krasser. ["lenga"] are two widely distributed species, while *N. procera* ["raulí"] and *N. obliqua* (Mirb.) Blume. ["roble pellín"], two species of valuable wood, form forests in the northern portion of the district. *N. dombeyi* (Mirb.) Blume

["coihue"] is distributed in the most humid areas, near the mountains and lakes, in the Provinces of Neuquén, Río Negro and Chubut (Cabrera, 1976). These species are used for different purposes, such as buildings, manufacturing of openings and furniture, posts and firewood.

In the review of insects associated with *Nothofagus* in Argentina and Chile Gentili & Gentili (1988) suggested that cerambycid beetles (Coleoptera: Cerambycidae) appear as one of the main groups of insects for

their damaging action to wood (Barriga *et al.*, 1993). The larvae make tunnels on the infested species during their development, affecting the quality of the wood (Cameron & Peña, 1982; FAO-CONAF, 2008). The description of the larval tunnels and pupal chambers of each species allows workers-researchers to identify at the species level the damage in different host plants, still in the adult's absence. Di Iorio (1995) used a methodology to describe the galleries from Cerambycid beetles that gives all the measurements from the larval tunnels, access/exit holes, emergence holes and pupal chambers.

The genus *Calydon* Thomson [Cerambycinae: Callidiini] is represented by two species in Argentina, *Calydon submetallicum* (Blanchard) and *Calydon globithorax* (Fairmaire & Germain) (Monné *et al.*, 2007). Specimens from Argentina, show that the larva of *Calydon* develops in *Nothofagus dombeyi* and *N. antarctica* (Monrós, 1944; Havrylenko & Winterhalter, 1949; Bosq, 1951, 1953). However, species of *Calydon* in Chile were recorded in *Nothofagus* but also in *Persea lingue* Nees. [Lauraceae], *Quillaja saponaria* Mol. [Rosaceae], and *Drimys winteri* Forst. [Winteraceae] (USDA/FS, 1993; FAO-CONAF, 2008). Giganti & Dapoto (1990) recorded it in Aluminé, Neuquén associated with lenga, ñire and coihue, but they don't describe the larval development, and Cameron & Peña (1982) said that the studies in Chile and Argentina consist in taxonomic studies and biological investigations are not-existent, also in Chile, Rojas & Gallardo (2004) and in the FAO-CONAF (2008) describe the larval galleries from *Calydon submetallicum* and give some measures but they don't illustrate the pupal chamber and the exit holes.

Havrylenko & Winterhalter (1949) describe very briefly the larval biology of *Calydon submetallicum*, repeated afterwards by Bosq (1953): "the larvae make galleries in the bark and superior layers of the wood and makes the nymphal chamber in thick bark, but in general the larvae penetrate the wood perpendicularly to a depth of 1,5 centimeters". In the present contribution

I document the presence of *Calydon submetallicum* in *Nothofagus obliqua*, an introduced species in northwestern Chubut Province (Argentina). The larval biology of *C. submetallicum* is described in detail and the pupal chamber with the exit holes are illustrated for the first time.

A portion of a dead tree of cultivated *Nothofagus obliqua* was collected from Trevelin, Chubut Province (Argentina). Dry wood was already cut and placed in breeding cages under natural conditions until the adults emerged. For the description of the larval tunnels and pupal chamber the terminology proposed by Di Iorio (1995) is followed, and the materials were deposited in their personal collection (ODI). All measurements are detailed in the text and were taken using a digital caliper. To take the photographs, the wood was cut in small pieces.

The materials examined are from: Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires (MACN); Osvaldo Di Iorio personal collection, Buenos Aires (ODI).

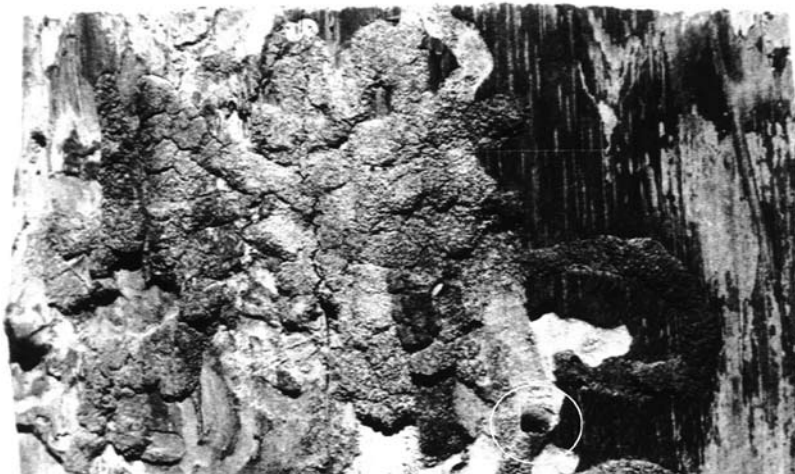
***Calydon submetallicum*** (Blanchard, 1851)  
(Figs. 1-6)

**Known geographical distribution:**

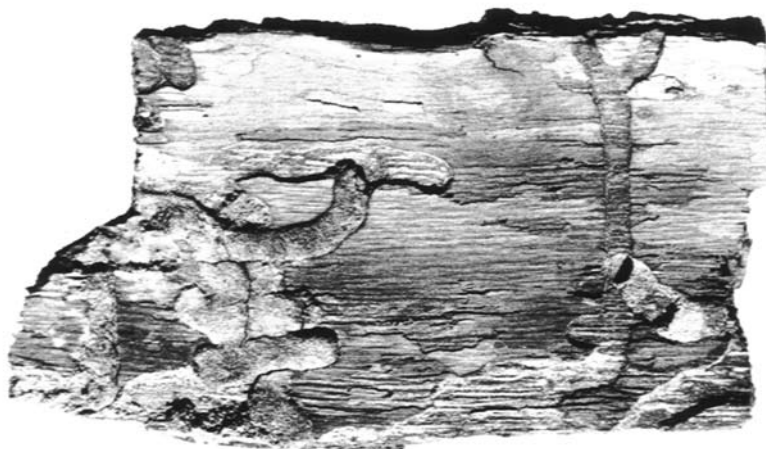
ARGENTINA: Neuquén: Lago Lacar, Lago Notehue, San Martín de los Andes; Río Negro: Nahuel Huapi, El Bolsón; Chubut: Lago Krugger (as "Kroger"), Lago Menendez (as "Mendez"), El Hoyo and Epuyen (as "Hoya de Epuyen"); Santa Cruz (Bosq, 1951); CHILE: Santiago, Coquimbo, Concepción, Valdivia, Chillán, Aculeo (Fairmaire & Germain, 1859).

**Known host plants:**

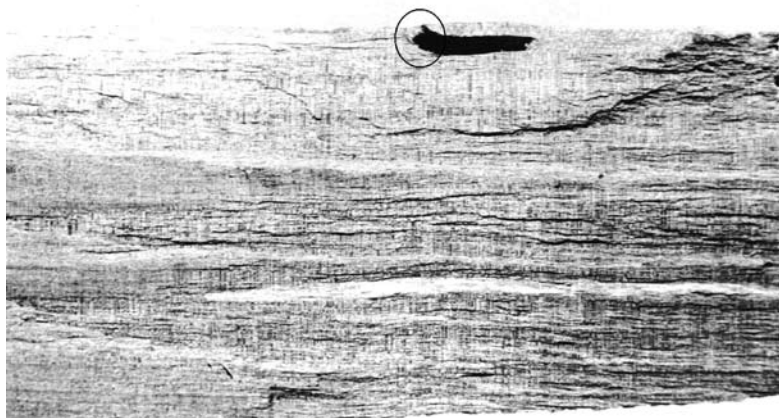
ARGENTINA: *Nothofagus antarctica* (Isla Victoria: Havrylenko & Winterhalter, 1949; Nahuel Huapi: Bosq, 1951 [following Havrylenko, pers. com.]; Bosq, 1953 [in dead wood]); *Nothofagus dombeyi* (Isla Victoria: Monrós, 1944 [in living and dead trees]; Havrylenko & Winterhalter, 1949 [in dead wood]; Nahuel Huapi: Bosq, 1951 [following Havrylenko, pers. com.]; Bosq, 1953 [in living and dead trees]); CHILE: *Nothofagus betuloides* (Mirb.)



**Fig. 1.** Larval tunnel: Inner portions in the xylem, showing the packed frass, no individual limits, and the access/exit hole of a pupal chamber from *Calydon submetallicum* in *Nothofagus obliqua*.



**Fig. 2.** Larval tunnel: Outer portions on the internal side of the bark, and the additional tunnel in front of the access/exit hole from *Calydon submetallicum*.



**Fig. 3.** Pupal chamber of *Calydon submetallicum* in longitudinal section, with the apical frass plug.

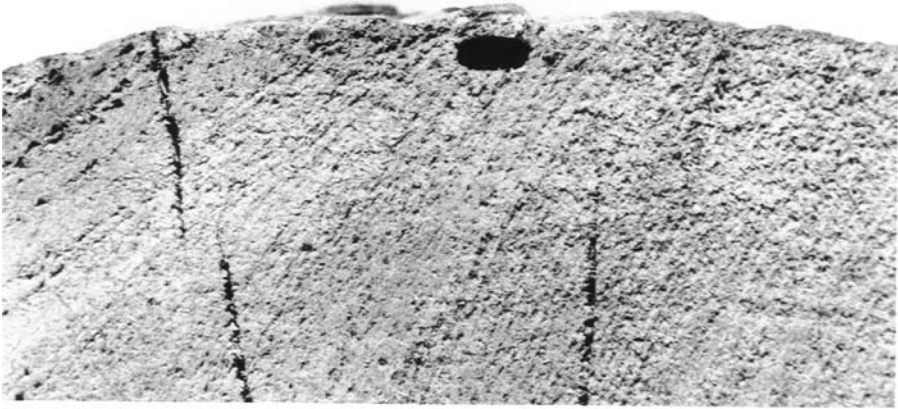


Fig. 4. Pupal chamber of *Calydon submetallicum* in cross-section.



Fig. 5. Longitudinal section of the additional tunnel in front of the access/exit hole, showing the thin wall left by the larvae of *Calydon submetallicum*.

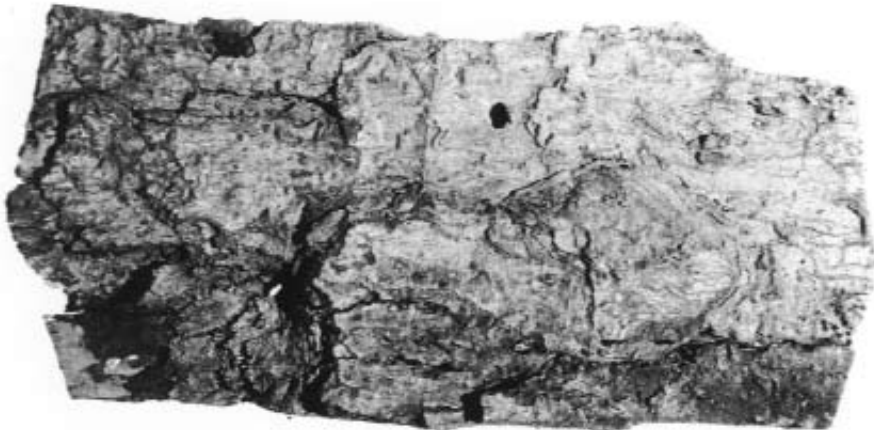


Fig. 6. Emergence holes from *Calydon submetallicum*.

Blume (USDA/FS, 1993); *Nothofagus glauca* (USDA/FS, 1993); *Nothofagus obliqua* (Fairmaire & Germain, 1859: 511; USDA/FS, 1993); *Persea lingue* (USDA/FS, 1993); *Quillaja saponaria* (USDA/FS, 1993); *Drimys winteri* (USDA/FS, 1993).

**Material examined:** ARGENTINA: Neuquén: San Martín de los Andes, I-1941, Bridarolli leg., 1 ex. (ODI), XII-1957, 1 ex. (ODI), XI-1963, 2 exx. (ODI), 2-II-1965, Réchencq leg., 1 ex. (ODI), I-1975, Holfeltz leg., 3 exx. (ODI); Río Negro: Bariloche, 10-X-1970, Réchencq leg., 1 ex. (ODI); Villa La Angostura, II-1973, Martínez A. leg., 1 ex. (ODI); CHILE: Panguipulli, 1925, 1 ex. (ODI).

**Larval biology:** the larval tunnels are subcortical, filled by very fine and compacted frass that occupies part of the xylem (Fig. 1) and of the cambium-phloem-bark (Fig. 2). As the larvae develop, the dimensions of the tunnels increase in diameter up to 8.08 x 3.67 mm (N = 5, X = 1.69 ± 0.30 mm), and the orientation is mostly longitudinal. In cases of high larval densities, these tunnels lack individual limits (i.e., are joined together; Fig. 1). The pupal chambers are built at the end of each larval tunnel, with a length of 25.0 mm, 18.0 x 3.7 mm in cross-section (Fig. 3), with the width oriented in the sense of the growth rings (Fig. 4). The sawdust plug is apical, with their internal face concaves (Fig. 4), and occupies 2.6 mm of the access/exit tunnel. The depth of the pupal chambers varies between 4.3 and 8.7 mm (Fig. 4). The access/exit holes are slanted 45° in respect to the longitudinal axis of the plant (Fig. 1), and they measure 4.32-6.80 mm width (N=18, x = 5.53 ± 0.81 mm) and 2.67-5.01 mm in height (N=18, x = 3.77 ± 0.73 mm). Due to the thickness of the bark, the larvae continue the access/exit tunnels in the bark, also filling in this portion with frass (Fig. 5). This additional tunnel increases in width to 4.5-5.9 mm before the external surface of the bark (Fig. 5). The emergence holes are built by the adults, generally slanted (Fig. 6), rarely horizontal in a similar way to the access/exit holes. They have similar dimensions to those

of the access/exit holes (4.5 x 3.6 mm, 5.0 x 2.8 mm, 6.0 x 4.0 mm), with the margins barely irregular. A total of twenty specimens (*Calydon submetallicum*) emerged, but emergence data was not recorded.

Undoubtedly, the larval tunnels of *Calydon submetallicum* are subcortical, and they embrace part of the internal face of the bark-cambium-phloem, independently of the thickness of these tissues, just as it happens in other species of subcortical Cerambycidae (Di Iorio, 1995). When Havrylenko & Winterhalter (1949) mentioned that the larva "penetrates generally inside the wood in perpendicular orientation to the axis of the trunk or the cluster", they refer in fact to the access/exit tunnel of the pupal chamber, since this is parallel to the longitudinal axis of the plant (Fig. 5). The "nymph chamber" in the bark observed by Havrylenko & Winterhalter (1949) corresponds to the continuation of the emergence tunnel made by the larva in the bark (Fig. 4). This construction is additional, due to the thickness of the bark, to other pupal chambers derived of larval subcortical tunnels (Di Iorio, 1995).

**Additional comments:** In comparison with other cerambycidae species present in *Nothofagus* forests, the genus *Calydon* makes a smaller gallery and pupal chamber than species like *Holopterus chilensis* (Blanch.). It lives deep in the wood making galleries in dead portions, affecting its commercial value and is not present in Chubut Province (Grandón, ined.; Monné *et al.*, 2007). *Calydon* makes galleries under the bark on dead and living trees and is susceptible to bird predation and parasitism by *Pristaulacus* sp. (Hymenoptera: Aulacidae) (Barriga 1990).

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